

IN THE UNITED STATES PATENT
AND TRADEMARK OFFICE

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TOOL TO REPLACE MOTORCYCLE BRAKE PADS

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1 **I. TITLE: " TOOL TO REPLACE MOTORCYCLE BRAKE PADS "**

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3 **II. BACKGROUND OF THE INVENTION**

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5 **1. Field of the Invention.**

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7 The present invention relates to tools, and more particularly, to tools
8 used to facilitate the replacement of brake pads.

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10 **2. Description of the Related Art.**

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12 Many designs for tools have been designed in the past. None of
13 them, however, include curved elongated substantially flat members
14 having wedged ends that mount onto discs of wheel assemblies, such as
15 motorcycle wheel assemblies, for the replacement of brake pads.

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17 Applicant believes that the closest reference corresponds to U.S.
18 Patent No. 4,809,567 issued to Bongard for Disc brake tool and kit.
19 However, it differs from the present invention because Bongard teaches a
20 disc brake tool and kit that is used for back seating disc brake pistons into
21 the bores after old brake pads have been removed to make room for new
22 brake pads. The disc brake tool includes a driven jaw with a first bearing
23 surface and gudgeon socket, a driving jaw with second bearing surface and
24 a centrally located threaded hole, and a threaded bolt which screws into
25 the centrally located threaded hole and seats within the gudgeon socket to
26 maintain the two bearing surface in parallel relation to each other. Turning
27 the threaded bolt in one direction causes the bearing surfaces on the jaws to
28 move away from each other thereby driving the disc brake piston back into

1 its bore. Rotating the threaded bolt in the other direction loosens the jaws
2 and bolts so that they can be removed from within the caliper of the disc
3 brake. The kit further includes a U-shaped clip, which may be placed over
4 the jaws, which are joined to form a compact container in which the
5 threaded bolt is received for easy storage.

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7 Applicant believes that another reference corresponds to U. S. Patent
8 No. 5,269,053 issued to Hicks for Compact disc brake piston retraction tool
9 and method for retracting disc brake piston. However, it differs from the
10 present invention because Hicks teaches a compact disc brake piston
11 retraction tool and method for retracting a disc brake piston for moving a
12 disc brake piston into a retracted position in the cylinder position in the
13 cylinder bore of a disc brake caliper in order to allow the replacement of
14 worn disc brake pads. The tool includes a threaded bolt, and a threaded
15 collar. The bolt-collar assembly can operate alone or be attached to a brace
16 support wall to enable it to be braced against the caliper arms, opposite the
17 brake piston. This allows pressure to be exerted on the disc brake piston
18 by the rotation of the collar around the threaded bolt, thereby causing the
19 bolt-collar assembly to lengthen and exert pressure against the disc brake
20 piston by a variety of means such as directly, by a piston bearing plate, or a
21 brake pad attached to the brake piston. It can use a brace support wall or
22 omit it and, can either use a piston bearing plate and/or collar journal
23 collar end cap to transfer the pressure to the disc brake piston to force the
24 piston back into the cylinder bore. Methods of using it are also provided.

25

26 Other patents describing the closest subject matter provide for a
27 number of more or less complicated features that fail to solve the problem

1 in an efficient and economical way. None of these patents suggest the
2 novel features of the present invention.

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4 **III. SUMMARY OF THE INVENTION**

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6 A tool to replace vehicle brake pads, comprising a pair of curved
7 elongated substantially flat members each wedged at one end with
8 securing means to secure to one another when mounted onto each side of a
9 wheel assembly. The wheel assembly has a plurality of first through-holes
10 and the pair of curved elongated substantially flat members are used to
11 cammingly displace disc brake pistons into their respective bores to make
12 room for replacement of old brake pads with new brake pads.

13

14 The securing means includes the pair of curved elongated
15 substantially flat members each having a plurality of second through-holes
16 that align with the first through-holes and a securing device attaching
17 through the first through-holes and second-through-holes. The pair of
18 curved elongated substantially flat members each has first and second faces
19 and first and second ends. The first faces are substantially flush and face
20 the each side of the wheel assembly when mounted upon. Each of the
21 second faces has a wedge section extending a predetermined distance from
22 the first ends towards the second ends without reaching the second ends.

23

24 The pair of curved elongated substantially flat members are mounted
25 onto the wheel assembly and the wheel assembly is rotated so that the
26 wedge section slides in between the disc brake pistons and the wheel
27 assembly to cammingly displace the disc brake pistons into their respective
28 bores with the second faces.

1
2 The wheel assembly is of an automobile, motorcycle, truck, tractor, or
3 trailer, or other vehicle having a similar braking system. The wheel
4 assembly may be a disc.

5
6 It is therefore one of the main objects of the present invention to
7 provide a tool to replace motorcycle brake pads for back seating disc brake
8 pistons into their bores without having to remove the front or rear wheel
9 assembly.

10
11 It is another object of this invention to provide a tool to replace
12 motorcycle brake pads that mounts onto the disc of a motorcycle wheel
13 assembly.

14
15 It is another object of this invention to provide a tool to replace
16 motorcycle brake pads without bending or warping front or rear wheel
17 assemblies.

18
19 It is another object of the present invention to provide a tool to
20 replace motorcycle brake pads that comprises a pair of curved elongated
21 substantially flat members wedged at one end that mount onto either side
22 of wheel assembly discs.

23
24 It is still another object of the present invention to provide a tool to
25 replace motorcycle brake pads that slide in between disc brake pistons and
26 the motorcycle disc, forcing the disc brake pistons into their bores.

1 It is still another object of the present invention to provide a tool to
2 replace motorcycle brake pads without having to bleed the vehicle's brake
3 line system.

4

5 It is yet another object of this invention to provide such a device that
6 is inexpensive to manufacture and maintain while retaining its
7 effectiveness.

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9 Further objects of the invention will be brought out in the following
10 part of the specification, wherein detailed description is for the purpose of
11 fully disclosing the invention without placing limitations thereon.

12

13 **IV. BRIEF DESCRIPTION OF THE DRAWINGS**

14

15 With the above and other related objects in view, the invention
16 consists in the details of construction and combination of parts as will be
17 more fully understood from the following description, when read in
18 conjunction with the accompanying drawings in which:

19

20 **Figure 1** represents a perspective view of the present invention.

21

22 **Figure 2** shows a top view of the instant invention mounted onto the
23 disc of a wheel assembly and back seating disc brake pistons into their
24 bores.

25

26 **Figure 3** illustrates a left side view of the instant invention mounted
27 onto a motorcycle disc.

28

1 **Figure 4** is a representation of the instant invention having back
2 seated the disc brake pistons into their bores after wheel assembly 100 has
3 rotated in a counter-clockwise direction from the position seen in Figure 3,
4 forcing the instant invention to slide in between the disc brake pads 116
5 and the motorcycle disc 104.

6

7 **V. DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENT**

8

9 Referring now to the drawings, where the present invention is
10 generally referred to with numeral 10, it can be observed that it basically
11 includes right elongated member 20 and left elongated member 20'. Right
12 elongated member 20 is a mirror image of left elongated member 20'. Right
13 elongated member 20 is mounted onto the right face of a wheel assembly
14 disc and left elongated member 20' is mounted onto the left face of the
15 wheel assembly disc. In the preferred embodiment, the wheel assembly is
16 of a "Harley Davidson" motorcycle. However, the motorcycle may be any
17 vehicle so long as the vehicle rim/disc has holes, such as holes 114 seen in
18 figures 3 and 4, for the instant invention to mount upon.

19

20 As seen in figure 1, right elongated member 20 and left elongated
21 member 20' have cooperative characteristics to mount and be secured upon
22 vehicle discs. Right elongated member 20 and left elongated member 20'
23 are substantially flat; having plateaued section 22 that extends from end 28
24 to ridge 24. Extending from ridge 24 is wedge 26 that terminates at edge
25 30. Holes 32 are through-holes trespassing right elongated member 20 and
26 left elongated member 20'.

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28

1 As seen in figure 2, right elongated member 20 and left elongated
2 member 20' are mounted and secured upon disc 104 of wheel assembly
3 100, seen in figures 3 and 4. In the preferred embodiment, right elongated
4 member 20 and left elongated member 20' are bolted to each other with
5 disc 104 in between them, as shown in the illustrated figure. When
6 mounted and secured upon disc 104, holes 32 of right elongated member 20
7 and left elongated member 20' align with holes 114. Flush section 34 faces
8 each face of disc 104 and in the preferred embodiment, the gap between
9 each flush section 34 and disc 104 is as small as possible. Wing bolts 36 and
10 nuts 38 may be utilized as a securing device to attach right elongated
11 member 20 and left elongated member 20' to each other with disc 104 in
12 between.

13

14 As seen in the illustrated embodiment, brake caliper 108 comprises
15 pistons 116 and their respected bores 118. As shown, wedges 26 cause
16 pistons 116 to back seat into their respective bores 118 as right elongated
17 member 20 and left elongated member 20' pass between disc 104 and
18 pistons 116. Once pistons 116 are set back into their respective bores 118,
19 there is room for the replacement of the old brake pads, not seen. Also
20 seen in figure 2, are holes 122 to receive brake pins 120.

21

22 Seen in figure 3 is a motorcycle wheel assembly and strut. Wheel
23 assembly 100 comprises tire 102 mounted onto rim 105. Disc 104 is secured
24 onto rim 105 and is mounted onto strut 106 by pin 112. Also secured to
25 strut 106 is brake caliper 108. Brake caliper 108 is attached onto strut 106
26 with end nuts 110. As seen in this illustration, left elongated member 20' is
27 secured onto the left face of disc 104, not shown is right elongated member
28 20 secured onto the right face of disc 104. In the preferred embodiment,

1 both left elongated member 20' and right elongated member 20 are secured
2 onto disc 104. This ensures that equal force will be applied to pistons 116
3 when wedge 26 is forced against them. The instant invention, as seen in
4 the illustrated figure, has been mounted and secured upon disc 104, and is
5 in position to be utilized.

6

7 As seen in figure 4, wheel assembly 100 has been rotated in a counter-
8 clockwise direction forcing instant invention 10 within brake caliper 108,
9 thus forcing pistons 116 to back seat into their respective bores 118, as seen
10 in figure 2. Once pistons 116 are set back into their respective bores 118
11 there is room for the replacement of the old brake pads, not seen.

12

13 In operation, left elongated member 20' is secured onto the left face of
14 disc 104 and right elongated member 20 is secured onto the right face of
15 disc 104, only the left side is seen in figures 3 and 4. Brake pins 120 are
16 removed from brake calipers 108. The removal of brake pins 120 will
17 sometimes cause brake pads, not seen, to slide or fall out completely of
18 brake caliper 108.

19

20 In the preferred embodiment, wheel assembly 100 is rotated in a
21 counter-clockwise direction so that edge 30 meets pistons 116 in brake
22 caliper 108, seen in figure 2. Instant invention 10 will cause the brake pads,
23 not seen, to slide completely from brake caliper 108, as wheel assembly 100
24 rotates, in the event they had not slid or fallen out when brake pins 120
25 were previously removed. Wheel assembly 100 continues to be rotated
26 until nut 38 or wing bolt 36 approaches brake caliper 108 as seen in figure
27 4. With the length of plateaued sections 22, it is clear to see that wedge 26
28 has cleared the length of brake caliper 108. In the illustrated position,

1 plateaued sections **22** have forced pistons **116** to sit back into their
2 respective bores **118**, as seen in figure 2. Once in the illustrated position,
3 wheel assembly **100** is rotated in a clockwise direction, clearing the area for
4 the installation of new brake pads, not seen.

5

6 In the preferred embodiment, left elongated member **20'** and right
7 elongated member **20** are approximately 0.317 inches in thickness from
8 plateaued section **22** to flush section **34**. However, thickness of left
9 elongated member **20'** and right elongated member **20** may vary according
10 to brake pad thickness and brake caliper tolerances. In some cases left
11 elongated member **20'** and right elongated member **20** thickness may range
12 from 0.001 to 10.0 inches and even more, depending on the equipment it is
13 used for, such as but not limited to, automobiles, buses, tractors, and other
14 vehicles having similar brake pad systems. Left elongated member **20'** and
15 right elongated member **20** can also vary in length, depending on the
16 number of pistons in the brake caliper.

17

18 In addition, the instant invention typically applies even pressure on
19 each side of the wheel assembly disc, since instant invention **10** mounts on
20 each side of the wheel assembly disc, preventing bending or warping of the
21 wheel assembly disc.

22

23 The instant invention may be utilized to safely replace old vehicle
24 brake pads without opening the brake line system. Therefore, it is not
25 necessary to bleed the brake line system. Furthermore, the instant
26 invention may be used to replace brake pads on front or rear wheel
27 assemblies.

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1 The foregoing description conveys the best understanding of the
2 objectives and advantages of the present invention. Different embodiments
3 may be made of the inventive concept of this invention. It is to be
4 understood that all matter disclosed herein is to be interpreted merely as
5 illustrative, and not in a limiting sense.

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